

NEW TAXA AND NEW COMBINATIONS IN AUSTRALIAN GNAPHALIINAE (INULEAE: ASTERACEAE).

by

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ABSTRACT

Short, P. S. New taxa and new combinations in Australian Gnaphaliinae (Inuleae: Asteraceae). *Muelleria* 7(2): 239–252 (1990). One new genus, *Tietkensia* P. S. Short is described, two species of *Angianthus* Wendl., two species of *Gnephosis* Cass. and one species of *Millotia* Cass. are described for the first time, and species of *Scyphocoronis* A. Gray and *Toxanthes* Turcz. are referred to *Millotia*. New species and new combinations are: *Angianthus newbeyi* P. S. Short, *A. uniflorus* P. S. Short, *Gnephosis cassiniana* P. S. Short, *G. setifera* P. S. Short, *Millotia incurva* (D. A. Cooke) P. S. Short, *M. major* (Turcz.) P. S. Short, *M. muelleri* (Sond.) P. S. Short, *M. perpusilla* (Turcz.) P. S. Short, *M. steetziana* P. S. Short and *Tietkensia corrickiae* P. S. Short.

INTRODUCTION

For some years I have been aware of a number of undescribed Australian taxa attributable to the Inuleae (*sensu* Merxmüller *et al.* 1978). I have also felt that the circumscription of a number of genera leaves much to be desired (*e.g.* Short *et al.* 1989). With accounts of the Asteraceae soon due for the *Flora of Australia* some of the new taxa are described and some new combinations are made in this paper.

TAXONOMY

Angianthus Wendl.

Subsequent to my revision of *Angianthus* Wendl. (Short 1983) a number of new or possibly new taxa attributable to this genus have been discovered. Two of these are here described as new species.

Angianthus newbeyi P. S. Short, *sp. nov.*

Herba annua. Axes majores ascendentes usque erecti, usque ad c. 5 cm longi, gossypini. *Folia* alterna, linearia vel lanceolata vel anguste oblonga, c. 0.4–1.3 cm longa, 0.07–0.1 cm lata, gossypina. *Glomeruli* anguste ellipsoidei vel lanceoloidei, c. 0.7–1.5 cm longi, c. 0.3–0.4 cm diametro; bractae glomerulos subtendentes inconspicuae sed aliquot bractae foliiformes praesentes. *Capitula* c. 20–50. *Bractae capitulum subtendentes* 2–3, obovatae vel ellipticae, 2.1–2.9 mm longae, 0.9–1.2 mm latae; costa viridi ad apicem pilosa; lamina supra pars vix constricta, hyalina marginibus pilis. *Bractae intra capitulum*: duo concavae 2–2.3 mm longae, costa glabra vel pilifera; duo planae, obovatae, 2.1–2.2 mm longae, 1–1.2 mm latae, in infima tertia parte attenuatissimae, glabrae. *Flosculi* 2; corolla 5-lobata, tubos 1.3–1.5 mm longos. *Stamina* 5; antherae c. 0.87–0.89 mm longae, sporangiis c. 0.69–0.7 mm longis, appendice terminali c. 0.18–0.19 mm longa. *Cypselae* maturae non visae. *Pappus* annularis, c. 0.1–0.2 mm longus laceratus.

HOLOTYPE: Western Australia, 18 km E of Jyndabinbin Rocks, c. 50 km SE of Norseman, 22.ix.1980, *Newbey 7567* (PERTH).

Annual herb. Major axes ascending to erect, up to c. 5 cm long, cottony. *Leaves* alternate, linear or lanceolate or narrowly oblong, c. 0.4–1.3 cm long, 0.07–0.1 cm wide, cottony. *Compound* heads narrowly ellipsoid or lanceoloid, 0.7–1.5 cm long, 0.3–0.4 cm diam; bracts subtending compound heads not forming a conspicuous involucre but a few leaf-like bracts present. *Capitula* c. 20–50 per compound head. *Capitulum subtending bracts* 2–3, obovate or elliptic, 2.1–2.9 mm long, 0.9–1.2 mm

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wide, mainly hyaline but with a green midrib extending c. $2/3$ the length of the bract; midrib with long hairs at the apex; lamina barely constricted in the upper part, with long hairs on the margin. *Capitular bracts* with the two concave ones 2–2.3 mm long, the midrib glabrous or with a few long hairs; inner bracts 2, obovate, 2.1–2.2 mm long, 1–1.2 mm wide, abruptly attenuated in the lower $1/3$, the edge of the bracts incurved so as to slightly cover the florets, glabrous. *Florets* 2; corolla 5-lobed, tube 1.3–1.5 mm long. *Stamens* 5; anthers c. 0.87–0.89 mm long, with microsporangia c. 0.69–0.7 mm long, the apical appendage c. 0.18–0.19 mm long. *Pollen grains* c. 400 per anther. *Cypselae* (mature) not seen. *Pappus* a jagged ring, c. 0.1–0.2 mm long.

DISTRIBUTION:

Western Australia. Only known from the type locality [and possibly from Dundas Rocks—re *Short 1112*].

ECOLOGY & REPRODUCTIVE BIOLOGY:

Newbey recorded the following information on the holotype sheet: 'Common in patches in *Melaleuca* aff. *cuticularis* Scrub . . . Well-drained, subsaline sand. Moderately exposed short slope into salt lake.'

A pollen:ovule ratio of 1,190, determined from a single floret from the holotype, suggests that plants commonly cross-pollinate.

NOTES:

1. The specific epithet commemorates Ken Newbey (1936–1988) of Ongerup, Western Australia (Kenneally 1988).

2. This species appears to be most closely related to *A. conocephalus* (J. M. Black) P. S. Short, a species which occurs in the adjacent Nullarbor Plain region, and *A. cornutus* P. S. Short, which is found to the north of *A. newbeyi* in the vicinity of Carnegie, Leonora and Wiluna. *A. conocephalus* is readily differentiated as it has ovoid compound heads about 0.8–1.6 cm long and less hairy, semisucculent, comparatively bright green leaves. In that species the uppermost leaves also have a small hyaline apex and merge gradually with the inner bracts of the general involucre. In *A. newbeyi* the general involucre is not well-formed, the leaf-like bracts could be interpreted as leaves, and a gradation from leaf to bract is not particularly pronounced. *A. cornutus* is readily differentiated by the pronounced general involucre and the lack of a pappus. Although the holotype does not contain completely mature specimens a jagged ring-like pappus was discernible in *A. newbeyi*.

2. In the previously published key to species (Short 1983) *A. newbeyi* should key to lead 17. In the same publication *Short 1112*, a collection of somewhat immature plants, was tentatively referred to *A. cornutus*. It seems more likely that it should be referred to *A. newbeyi*.

3. The species is only known with certainty from the type locality and is therefore a candidate for the conservation status '1K' (Leigh *et al.* 1984).

Angianthus uniflorus P. S. Short, *sp. nov.*

Herba annua. Axes maiores ascendentes usque erecti, usque ad 7 cm longi, gossypini. *Folia* alterna, linearia, lanceolata vel oblanceolata, c. 0.5–1.05 cm longa, 0.05–0.15 cm lata, gossypina. *Glomeruli* ovoidei usque late ovoidei vel ellipsoidei usque late ellipsoidei, 0.6–1 cm longi, 0.5–0.7 cm diametro; bractae glomerulos subtendentes involucrum conspicuum longitudine c. $1/3$ glomeruli formantes, bractae foliiformes sed apicibus hyalinis. *Capitula* c. 30–60. *Bractae capitulum subtendentes* et bractae infra capitulum planae usque conduplicatae, anguste ellipticae vel lanceolatae, 2.2–3.2 mm longae, 0.6–0.9 mm latae, praecipue hyalinae sed costa viridi lamina supera pars saepe constricta, saepe apice flavido; bractae raro glabrae, plerumque pilis longis. *Flosculi* 1; corolla 5-lobata, tubos 1.7–2.2 mm longos. *Stamina* 5, antherae 1.14–1.17 mm longae, sporangii 0.9–0.98 mm longiis, appendice terminali 0.19–0.24 mm longa *Cypselae* maturae non visae. *Pappus* cyathiformis, 0.3–0.4 mm longus, laceratus.

HOLOTYPE: Western Australia, c. 15 km S of Cue. 27° 38'S, 117° 52'E. 28.ix.1986, P. G. Wilson 12331 (PERTH). ISOTYPE: MEL 1553226.

Annual herb. Major axes ascending to erect, to c. 7 cm long, cottony. *Leaves* alternate, linear, lanceolate or oblanceolate, c. 0.5–1.05 cm long, 0.05–0.15 cm wide, cottony. *Compound heads* ovoid to widely ovoid or ellipsoid to widely ellipsoid, 0.6–1 cm long, 0.5–0.7 cm diam; bracts subtending compound heads forming a conspicuous involucre c. 1/3 the length of the head, bracts leaf-like but with hyaline apices. *Capitula* c. 30–60 per compound head. *Capitulum subtending bracts and capitular bracts* flat to conduplicate, narrowly elliptic or lanceolate, 2.2–3.2 mm long, 0.6–0.9 mm wide, mainly hyaline but with a green midrib extending c. 1/3–3/4 the length of the bract; lamina often with a distinct constriction in the dorsal part, apex often yellowish; rarely glabrous, usually with long hairs, particularly near the apex of the midrib. *Florets* 1 per capitulum; corolla 5-lobed, tube 1.7–2.2 mm long. *Stamens* 5; anthers 1.14–1.17 mm long, with microsporangia 0.9–0.98 mm long, the apical appendage 0.19–0.24 mm long. *Cypselas* (mature) not seen. *Pappus* a jagged cup, 0.3–0.4 mm long.

DISTRIBUTION:

Only known from the type locality near Cue, Western Australia.

ECOLOGY & REPRODUCTIVE BIOLOGY:

It is recorded on the type collection that the species was 'growing on lower margin of calcrete rise near gypseous salt lake'.

A pollen:ovule ratio of 4.820, determined from a single floret of *Wilson 12331*, suggests that the species commonly cross-pollinates.

NOTES:

1. The specific epithet reflects the fact that this is one of only two species of *Angianthus* with single-flowered capitula. This means that in the previously published key to species (Short 1983) *A. uniflorus* will key to lead 2 and be associated with *A. microcephalus*, the other species with a single floret in each capitulum. The latter is readily distinguished by the pappus which consists of two or three scales, each of which terminates in a barbellate bristle.

2. In the majority of species of *Angianthus* at least one capitulum-subtending bract and four capitular bracts (the outer two conduplicate, the inner two flat) are usually distinguishable. This is not the case in *A. uniflorus* and probably reflects that fact that one, not two florets occur in each capitulum, floret number to some extent determining the arrangement of bracts. In all other respects the bracts resemble those typically found in *Angianthus*.

3. The species is only known to me from the type locality and is therefore a candidate for the conservation status '1K' (Leigh *et al.* 1984).

Gnephosis Cass.

I have noted elsewhere (Short 1897, 1990) that *Gnephosis* Cass. is an unnatural genus and that *Gnephosis* s. str. possibly contains only six species, i.e. *G. drummondii* (A. Gray) P. S. Short, *G. multiflora* (P. S. Short) P. S. Short, *G. tenuissima* Cass., *G. tridens* (Short) P. S. Short and *G. trifida* (Short) P. S. Short and *G. uniflora* (Turcz.) P. S. Short. The aforementioned species have an erect habit, often elongated compound heads which lack a general involucre, an unbranched general receptacle, distinctive, leaf-like capitulum-subtending bracts and possess scale-like hairs on the leaves and major axes. Initially I felt that at least *G. setifera* was probably generically distinct from the other species mentioned, characterized by its prostrate habit, compound heads with a well developed involucre, a branched general receptacle, and a general vestiture of bristles, not scale-like hairs. However, with the discovery of *G. cassiniana*, my opinions have altered. This species looks very similar to two other, possibly conspecific species, *G. brevifolia* (A. Gray) Benth. and *G. eriocephala* (A. Gray) Benth. All three are characterized by compound heads which lack a general involucre,

a branched general receptacle, one or several leaf-like capitulum subtending bracts, and glabrous leaves. Some of these features are shared with either *G. setifera* or *G. tenuissima* and allied species with scale-like hairs.

Most importantly all of the species mentioned above are united by similarities in the fruit and capitular bracts. In all cases the fruit are small, pink or purple, glabrous or with scattered papillae, and have a thin pericarp which lacks sclerenchyma and contains two vascular bundles. Fruits do differ in the presence of what would normally be deemed a carpopodium. This always seems to be present in *G. tenuissima* and allied species but cannot be discerned in other species. However a short pedicel, resembling an annular carpopodium, is discernible on the partial receptacle of these species. Although there is considerable variation in the number of morphology of the capitulum-subtending bracts the capitular bracts have similar structure, always being essentially hyaline and with ciliate or long-ciliate margins.

Gnephosis cassiniana* P. S. Short *sp. nov.

Herba annua. Axes maiores erecti, 1–6 cm longi, glabri; *caulis simplex vel e nodis basalibus ramificans. Folia* ad basem opposita, supra alterna, sessilia, integra, succulenta, praecipue elliptica vel ovata sed infima linearia vel oblanceolata, 0.35–1.2 cm longa, 0.6–2.4 mm lata, glabra. *Glomeruli* ellipsoidei vel obovoidei, 0.35–1.2 cm longi, 0.25–0.8 cm diametro; *bractaeae glomerulos subtendentes involucrum conspicuum non formantes sed aliquot bractaeae foliiformes praesentes; receptaculum glabrum vel sparse pilosum. Capitula* (2–)6–30. *Bractaeae capitulum subtendentes* 1, foliiformes, succulentae, obovatae usque latissime obovatae vel circularis usque oblatae vel latissime ovatae, 2.8–3.8 mm longae, 1.7–3.9 mm latae, superis marginibus hyalinis, infernis marginibus longe pilosis. *Bractaeae intra capitulum* 9–12, anguste ellipticae vel lanceolatae vel interdum lineares, 1.7–3 mm longae, 0.2–0.4 mm latae; *bractaeae marginibus longe pilosis, duo exteriores bractaeae virides; interiores in verticillis uno plusve praecipue hyalinae. Receptaculum glabrum. Flosculi* 4–16; *corolla* 5-lobata, tubos 1.35–1.5 mm longos. *Styli rami truncati. Stamina* 5; *antherae* 0.72–0.8 mm longae, *sporangii* 0.56–0.64 mm longiis, *appendice terminali* 0.14–0.18 mm longa. *Cypselae* obovoideae, 0.4–0.5 mm longae, c. 0.3 mm diametro, roseae. *Pappus* absens.

HOLOTYPE: Western Australia, c. 2.5 km S of Binnu along Geraldton road. 28° 03'S, 114° 40'E. 20.ix.1983, *Short 2134* (MEL 693806). **ISOTYPI:** AD, CANB, MEL (wet colln), NSW, PERTH.

Annual herb, 1–6 cm high. *Major axes* erect, glabrous; stem simple or forming major branches at basal nodes; major axes sometimes developing minor shoots. *Leaves* opposite at the base, the upper ones alternate, sessile, entire, variably succulent, mainly elliptic or ovate but with the lowermost linear vel oblanceolate, 0.35–1.2 cm long, 0.6–2.4 mm wide, glabrous. *Compound heads* ellipsoid or obovoid, 0.35–1.2 cm long, 0.25–0.8 cm diam.; bracts subtending compound heads not forming a conspicuous involucre but several leaf-like bracts present, grading into capitulum-subtending bracts present, grading into capitulum-subtending bracts. *General receptacle* a simple axis with the capitula on very short peduncles (to c. 0.3 mm), glabrous or with a few long hairs. *Capitula* (2–)6–30 per compound head, each capitulum with 1 abaxial, leaf-like, variably succulent subtending bract that overlaps the capitular bracts. *Capitulum subtending bracts* ovate to widely depressed obovate or circular to oblate or very widely ovate, 2.8–3.8 mm long, 1.7–3.9 mm wide, the upper margins narrowly hyaline, the lower margins with long hairs, apex barely mucronate. *Capitular bracts* 9–12, narrowly elliptic or lanceolate or sometimes linear, 1.7–3 mm long, 0.2–0.4 mm wide, the outer pair of mainly green bracts enclosing one or more inner whorls of mainly hyaline bracts, all bracts with long hairs on the margins. *Partial receptacle* naked. *Florets* 4–16 per capitulum; *corolla* 5-lobed, tube 1.35–1.5 mm long; style branches truncate. *Stamens* 5; *anthers* 0.72–0.8 mm long, the microsporangia 0.56–0.64 mm long, the apical appendage 0.14–0.18 mm long. *Cypselas* obovoid, 0.4–0.5 mm long, c. 0.3 mm diam., pink. *Pappus* absent. (Fig. 1)

DISTRIBUTION:

Western Australia. Only known from the type locality near Binnu and from the western edge of Mongers Lake.

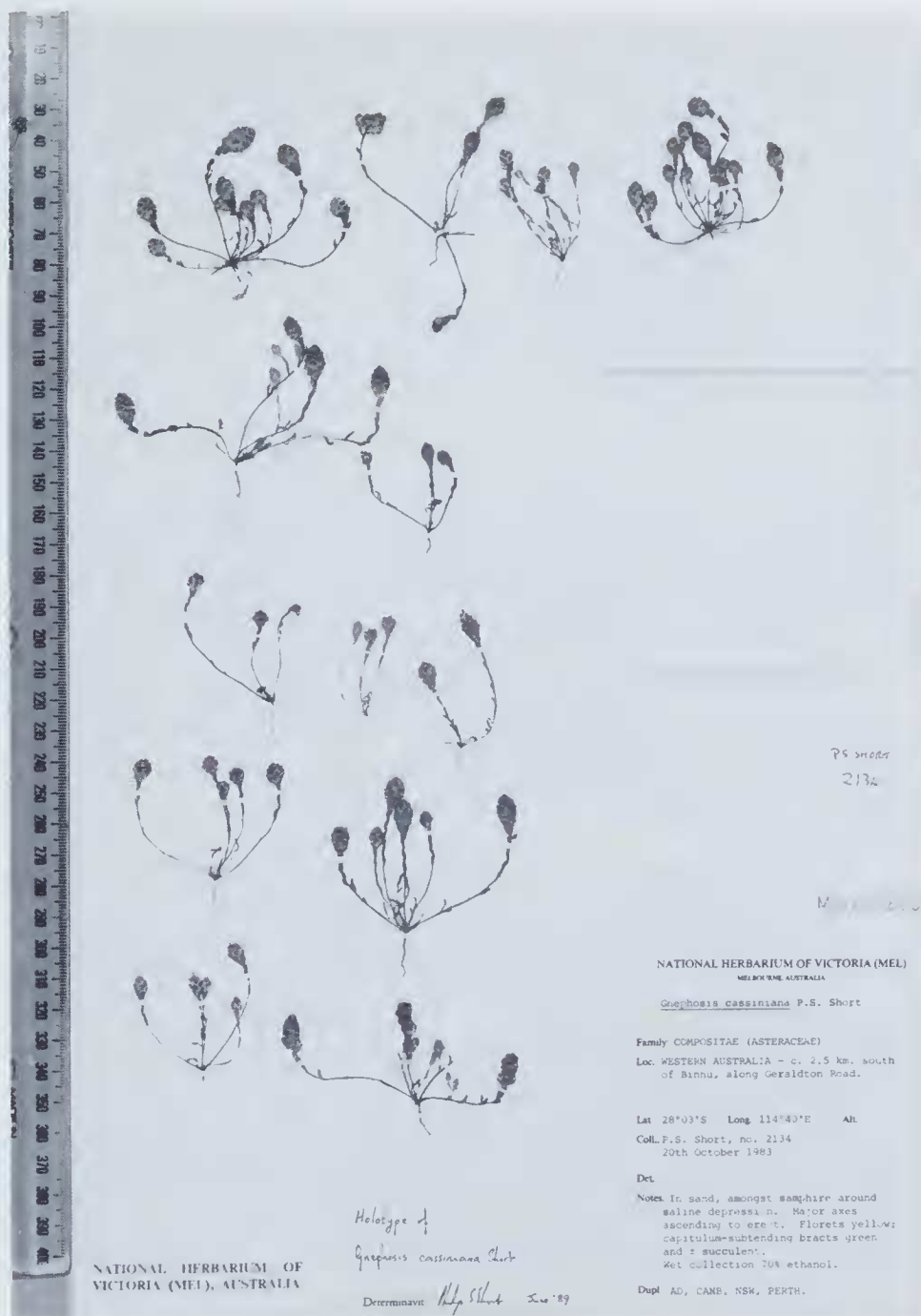


Fig. 1. Holotype sheet of *Gnephosis cassiniana* (Short 2134).

ECOLOGY & REPRODUCTIVE BIOLOGY:

At the type locality the plants were found growing amongst samphire on the margins of a saline depression. At Mongers Lake the species was recorded as growing in red sand.

A pollen:ovule ratio of 1,560, determined from a single floret of *Wilson 12298*, suggests that the species commonly cross-pollinates.

NOTES:

1. The specific epithet commemorates French botanist Alexandre-Henri Gabriel de Cassini (1781-1832).

2. This species seems to have its strongest affinities to *G. brevifolia* (A. Gray) Benth. and *G. eriocephala* (A. Gray) Benth. (both closely related to each other and possibly conspecific) but is readily distinguished by virtue of its succulent leaves and the well-developed hyaline margins and succulent nature of the capitulum-subtending bracts. It is also similar in habit to some forms of *G. tenuissima*, from which it is readily distinguished by the lack of scale-like hairs on the leaves and major axes.

SPECIMENS EXAMINED:

Western Australia—c. 2.5 km S of Binu, 11.ix.1986, *Short 2848, Amerena & Fuhrer* (MEL, PERTH); 6 km S of Warriadar HS near west bank of Mongers Lake, 26.ix.1986, *Wilson 12298* (MEL 1553236, PERTH *n.v.*).

Gnephosis setifera P. S. Short, *sp. nov.*

Herba annua, plerumque ramificans, interdum solum glomerulus sessilis in rosula basali foliarum; axes maiores prostrati, 0.2–0.5 cm longi, setis dispersis. *Folia* sessilia, integra, infima opposita, supra alterna, oblanceolata vel spatulata, 0.35–1.5 cm longa, 0.15–0.26 cm lata, setis dispersis. *Glomeruli* lati depressi ovoidei usque depressi ovoidei, 0.3–0.5 cm alti, 0.5–1.6 cm diametro; bractae glomerulos subtendentes involucrum conspicuum formantes, foliiformes, uno-vel duo-seriales; receptaculum ramosum. *Capitula* c. 10–45. *Bractae intra capitulum* duo vel tri-seriales, exteriores 1–4, foliiformes, setis et pilis longis-flexuosis, interiores c. 8–12, uno-vel duo-seriales, praecipue hyalinae, marginibus long ciliatis, pagina exteriore pilis longis flexuosis. *Flosculi* 5–11, hermaphroditi, tubularae; corolla 5-lobata. *Stamina* 5; antherae 0.85–0.88 mm longae, sporangiis 0.68–0.72 mm longiis, appendicibus terminalibus 0.15–0.18 mm longibus. *Cypselae* obovoideae, 0.44–0.57 mm longae, roseae; pericarpium fascibus vascularibus 2; carpodium absens. *Pappus* absens.

HOLOTYPE: Western Australia, c. 7 km south of Bunjil along road to Latham. 29° 42'S, 116° 24'E. 16.ix.1986, *Short 2955, Amerena & Fuhrer* (MEL 117004). **ISOTYPE:** PERTH.

Annual herb, sometimes a single compound head sessile in a basal rosette of leaves, usually branching; major axes prostrate, 0.2–0.5 cm long, with scattered bristles. *Leaves* sessile, entire, the lowermost opposite, the upper alternate, oblanceolate or spatulate, 0.35–1.5 cm long, 0.15–0.26 cm wide, with scattered bristles. *Compound heads* broadly depressed to depressed ovoid, 0.3–0.5 cm high, 0.5–1.6 cm diam.; bracts subtending the compound heads forming a conspicuous involucre, leaf-like, in 1 or 2 rows; general receptacle branching. *Capitula* c. 10–45 per compound head. *Capitular bracts* in 2 or 3 rows, c. the length of the florets; outer bracts 1–4, leaf-like, with bristles and long-flexuose hairs; inner bracts c. 8–12, in 1 or 2 rows, usually hyaline but partly green and opaque, the margins long-ciliate, the outer surface with some long-flexuose hairs. *Florets* 5–11 per capitulum, bisexual; corolla tubular, 5-lobed. *Stamens* 5; anthers 0.85–0.88 mm long, the microsporangia 0.68–0.72 mm long, the apical appendage 0.15–0.18 mm long. *Cypselas* obovoid, dark pink, 0.44–0.57 mm long, 0.27–0.33 mm diam.; pericarp with 2 vascular bundles; carpodium absent. *Pappus* absent. (Fig. 2)

DISTRIBUTION:

Western Australia. Only known from the Monger Drainage System (Bettenay & Mulcahy 1972).

ECOLOGY & REPRODUCTIVE BIOLOGY:

The species seems to be restricted to sandy saline soils. Collectors' notes include: 'in sand amongst *Gunniopsis* in a zone between the samphire of the saline depression and a sandy ridge dominated by *Melaleuca*' and 'in sand with *Halosarcia* and *Atriplex*'.

A pollen:ovule ratio of 1,664, determined from a single floret of *Short 2956 et al.*, suggests that plants commonly cross-pollinate.

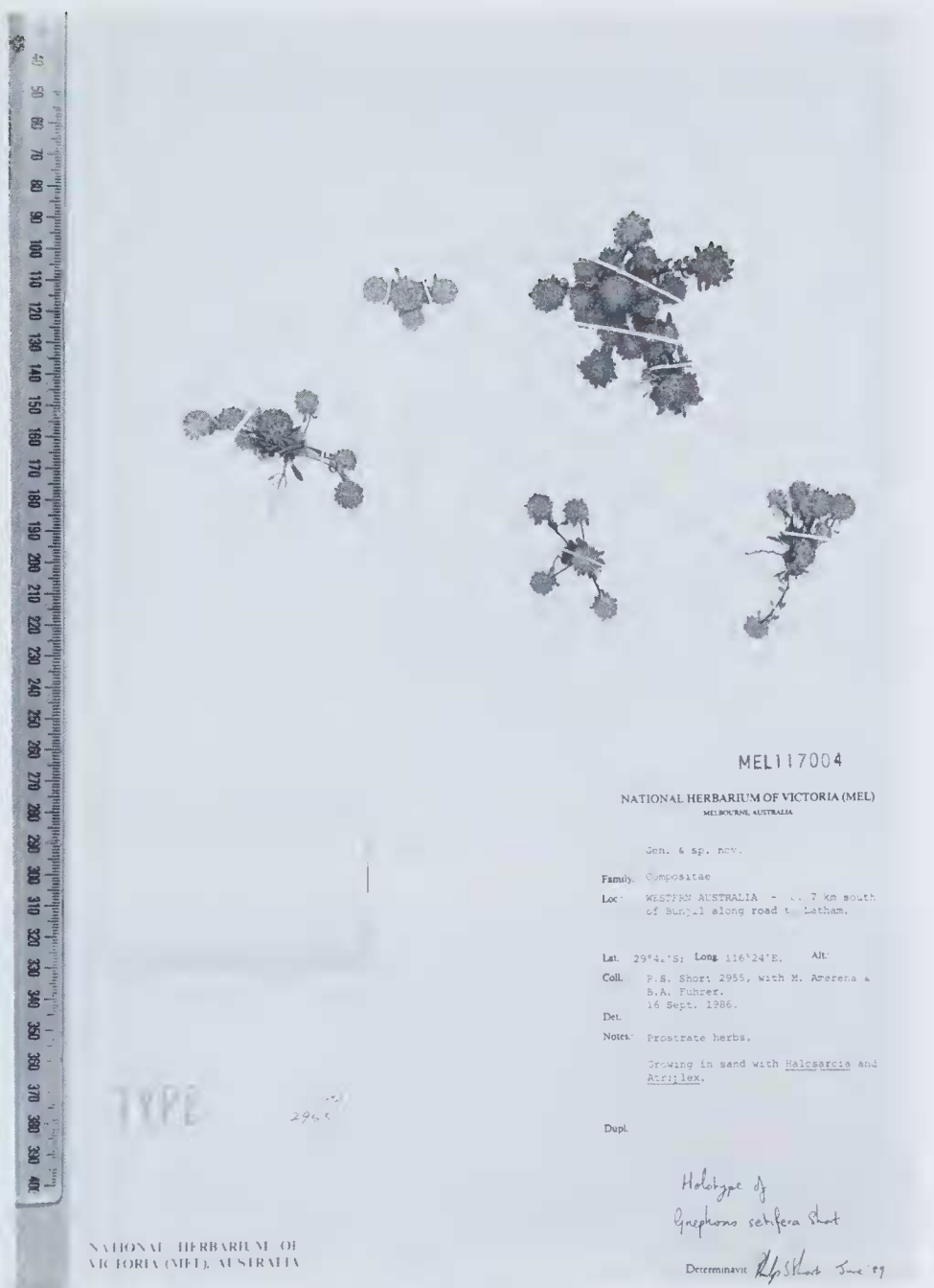


Fig. 2. Holotype sheet of *Gnephosis setifera* (Short 2955 et al.).

SPECIMENS EXAMINED:

Western Australia—On the road from Perenjori to White Wells Farm, 1 km E of Mongers L. 19.ix.1987, *Bergqvist* 040 (MEL, PERTH n.v., S n.v.); 7.2 km from Bunjil along road to Latham. 13.xi.1983, *Haegi* 2663 & *Short* (MEL); c. 7.3 km S of Bunjil. 18.ix.1977, *Short* 582 (AD, MEL); 5 km S of Morowa along road to Perenjori. 16.ix.1986, *Short* 2956, *Amerena* & *Fuhrer* (MEL, PERTH).

Millotia Cass.

Following the examination of the fruit anatomy and morphology of species of *Millotia*, *Scyphocoronis* and *Toxanthes* it was suggested (Short *et al.* 1989) that, unless considerable emphasis was placed on differences in fruit vestiture, there was little to support the contention of Schodde (1963) that the three genera be maintained. Schodde had already noted that the as then undescribed species, *S. incurva*, had the habit, indumentum and involucre of *Toxanthes*, the alternate leaves, free bracts, peduncles and floret form found in two species of *Millotia*, and the apical cup of *Scyphocoronis*. Accordingly *Scyphocoronis* and *Toxanthes* are herein reduced to synonymy under *Millotia*. New combinations are made and a new species, *M. steetziana*, is described.

Some past workers have obviously felt that the distinctive hollow, cup-like apex of the fruit justified the recognition of the genus *Scyphocoronis*. It certainly is a unique feature within Australian members of the Inuleae (*sensu* Merxmüller *et al.* 1978), but, the upper part of the fruit, whether it is beak-like, dilated at the apex, or cup-like, is always formed from a layer of sclerenchyma which is a continuation of the same layer of tissue surrounding the seed (Short *et al.* 1989). Thus, the unique feature is not only a single character difference but cannot be regarded as a major difference, merely an easily recognizable one. The relegation of *Scyphocoronis*, and indeed *Toxanthes*, to infrageneric rank also seems unwarranted.

The genus *Millotia* is readily differentiated from other Australian inuloid genera by the uniseriate involucre which is composed of bracts that are predominantly herbaceous. Other distinctive features, which at least in this combination are absent from other genera, include the elongated fruit, the often curved corolla tube, and the conical or subulate tips of the style branches.

NEW COMBINATIONS AND SYNONYMS IN MILLOTIA:

Millotia Cass., Ann. Sci. Nat. 17: 31, 416 (1829). T: *M. tenuifolia* Cass.

Toxanthes Turcz., Bull. Soc. Imp. Naturalistes Moscou 24(1):176 (27 March 1851). T: *T. perpusilla* Turcz.

Scyphocoronis A. Gray, Ic. Pl. 9, t. 854 (Apr.-Dec. 1851). T: *S. viscosa* A. Gray.

Anthocerastes A. Gray, Hook. J. Bot. Kew Gard. Misc. 4:225 (1852). T: *A. drummondii* A. Gray.

Millotia incurva (D. A. Cooke) P. S. Short, comb. nov.

BASIONYM: *Scyphocoronis incurva* D. A. Cooke, J. Adelaide Bot. Gard. 7:284 (1985).

Millotia major (Turcz.) P. S. Short, comb. nov.

BASIONYM: *Toxanthes major* Turcz., Bull. Soc. Imp. Naturalistes Moscou 24(2):64 (Aug.-Oct. 1851).—*Scyphocoronis major* (Turcz.) Druce, Bot. Soc. Exch. Club Brit. Isles 1916:646 (1917).

Scyphocoronis viscosa A. Gray, Ic. Pl. 9, t. 854 (Apr.-Dec. 1851).

Stafleu & Cowan (1979) cite the publication date of plates 801-888 of *Ic. Pl.* as April to December 1851, suggesting that plate 854 was published after August-October, the 'established' publication date of *T. major* in *Bull. Soc. Imp. Naturalistes Moscou* (Marchant 1990).

Millotia muelleri (Sond.) P. S. Short, comb. nov.

BASIONYM: *Anthocerastes muelleri* Sond., Linnaea 25: 480 (1853).—*Toxanthes muelleri* (Sond.) Benth., Fl. Austral. 3:592 (1867).

Millotia perpusilla (Turcz.) P. S. Short, comb. nov.

BASIONYM: *Toxanthes perpusilla* Turcz., Bull. Soc. Imp. Naturalistes Moscou

24(1):177 (27 March 1851).—*Anthocerastes drummondii* A. Gray, Hook. J. Bot. Kew Gard. Misc. 4:226 (Aug. 1852).

For other species of *Millotia* see Schodde (1963, 1968). Note that the name *Millotia cassini* Schodde ex Turner is illegitimate, having been used by Turner (1970), instead of the name *M. inopinata* Schodde, when publishing records of chromosome number determinations.

Millotia steetziana* P. S. Short, *sp. nov.

Herba annua; caulis simplex vel e nodis basalibus ramificans; axes maiores ascendentes usque erecti, c. 1.5–3.5 cm longi, pilis glandulosis. *Folia* ad basem opposita, superiora alterna, lanceolata usque linearia, 3–13 mm longa, 0.25–1 mm lata, erecta, integra, vix mucronata, pilis glandulosis. *Capitula* homogama, terminalia, solitaria. *Bracteae* 5–8, uniseriatae, liberae, ellipticae usque anguste ellipticae, 3–3.5 mm longae, 0.7–1 mm latae, praecipue herbaceae sed marginibus et apicibus hyalinis, pilos glandulosos terentes. *Flosculi* 9–31; corolla tubularis, alba; tubos 1.5–2.2 mm longos, pilis glandulosis, lobis 5. *Stamina* 5; antherae 0.79–0.95 mm longae, sporangiis 0.59–0.7 mm longis; appendice terminali triangulari, 0.18–0.25 mm longiba, *pollinis granis* c. 260–320. *Rami styli* apicibus conicis penicillatis. *Cypselae* cylindricae, rostratae, 3.4–4.6 mm longae, 0.2–0.3 mm diametro, pappilatae, atrofuscae; rostrum curvum, apice dilatato. *Pappus* absens.

HOLOTYPE: Western Australia, Western edge of Lake King, c. 33° 05'S, 119° 31'E. 11.ix.1982, Short 1685 (MEL 621024). ISOTYPE: AD, K, PERTH.

Annual herb; stem simple or forming major branches at basal nodes; major axes ascending to erect, c. 1.5–3.5 cm long, glandular-pubescent. *Leaves* with the lowermost pair(s) opposite, upper leaves alternate, lanceolate to linear, 3–13 mm long, 0.25–1 mm wide, erect, entire, barely mucronate, glandular pubescent. *Capitula* homogamous, terminal, solitary. *Capitular bracts* 5–8, uniseriate, free, elliptic to narrowly elliptic, 3–3.5 mm long, 0.7–1 mm wide, mainly herbaceous but with the margins and apex hyaline, glandular pubescent. *Florets* 9–31; corolla tubular, white, tube 1.5–2.2 mm long, with glandular hairs; lobes 5. *Stamens* 5; anthers 0.79–0.95 mm long, the microsporangia 0.59–0.7 mm long, the apical appendage 0.18–0.25 mm long. *Pollen grains* c. 260–320 per anther. *Style* apices conical, penicillate. *Cypselas* cylindrical, beaked, 3.3–4.6 mm long, 0.2–0.3 mm diam., papillate, dark brown; beak curved, dilated at the apex. *Pappus* absent. (Fig. 3)

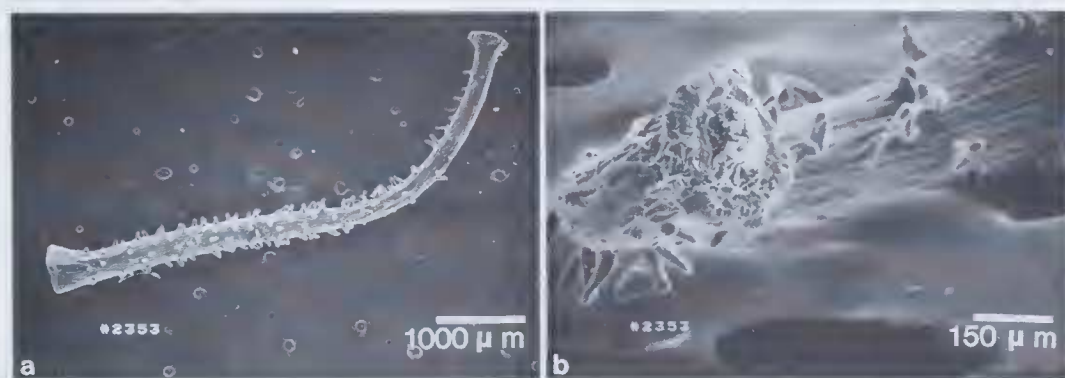


Fig. 3. Fruit of *Millotia steetziana* (Short 2353). a—entire fruit. b—apex.

DISTRIBUTION:

Only known from the western edge of Lake King, Western Australia.

ECOLOGY & REPRODUCTIVE BIOLOGY:

The species has only been found growing in white, probably somewhat saline sand, under *Melaleuca* and *Eucalyptus* on the edge of Lake King.

An average pollen:ovule ratio of 1,460 (determined from 5 florets of Short 1685) suggests that it commonly cross-pollinates.

NOTES:

1. The specific epithet commemorates the Hamburg botanist Joachim Steetz (1804-1862) (Short & Sinkora 1989) who first described a large number of Australian plants, including many in the Asteraceae.

2. The species is only known to me from the type locality and therefore should be accorded the conservation status '1K' under the formula of Leigh *et al.* (1984). It is locally common.

3. The closest relative of *M. steetziana* is probably *M. muelleri*, which differs by a 3-5 lobed corolla tube and an average pollen:ovule ratio of only 83.5 (Short 1981). *M. steetziana* is also very similar in general appearance to *M. major* but that species has fruit with a cup-like apex, a 4-5 lobed corolla tube, and also a low P/O, with determinations of 100 and 116 from two florets of Short 1736.

SPECIMENS EXAMINED:

Western Australia—Lake King, 10.xi.1983, Short 2353 & Haegi (MEL); Lake King, 7.ix.1986, Short 2748, Amerena & Fuhrer (AD, PERTH).

Tietkensia P. S. Short, *gen nov.*

Herba annua; plerumque quaeque planta glomerulus unus rosula foliorum erectorum, raro ramificans. *Folia* sessilia, integra, spatulata, marginibus basalibus alatis, tomentosa. *Glomeruli* transverse ellipsoidei usque lenticulares; involucrium generale absens; receptaculum multum ramosum, pilis longis. *Capitula* c. 5-50. *Bracteae* intra capitula c. 6-8, uniserialae, ellipticae vel ovatae; costae latae, indistinctae, viridulae vel purpuracentes, paginis exterioribus pilis longis; apices et margines hyalini, marginibus distalibus laciniatis. *Paleae* bracteis intra capitula similes. *Receptaculum* parziale glabrum. *Flosculi* c. 30-100, praecipue hermaphroditi sed 2-5 extremi feminei. *Flosculi feminei* filiformes; corolla flava, 3 vel 4-lobata; rami styli truncati. *Flosculi hermaphroditi* tubulares; corolla 5-lobata, flava vel interdum purpurascens; rami styli truncati. *Stamina* 5; antherae ad basem caudatae, ad apicem appendicibus sterilibus. *Cypselae* homomorphae, obovoideae, carpodium absens. *Pappus* absens.

TYPUS: *T. corrickiae*

Annual herb usually consisting of a compound head (rarely a single capitulum) surrounded by a basal rosette of erect leaves, rarely with a single major axis (c. 1 cm long) which branches from a basal node and terminates in a compound head. *Leaves* sessile, entire, spatulate but with wing-like margins (c. the length of the compound head) at the base, tomentose. *Compound heads* usually present, transversely elliptic to lenticular; bracts subtending compound heads absent; general receptacle much branched and enveloped with long hairs. *Capitula* c. 5-50 per compound head; capitular bracts c. 6-8, in a single whorl, elliptic or ovate; midrib broad, ill-defined, yellow-green to green or brownish purple, outer surface with long hairs; apex and margins hyaline, the distal margins ciliate. *Paleae* resembling the capitular bracts. *Partial receptacle* oblong, glabrous. *Florets* c. 30-100, mainly bisexual but c. 2-5 outermost ones female. *Female florets* filiform; corolla yellow, minutely 3 or 4-lobed. *Style* branches truncate and ? with short sweeping hairs. *Bisexual florets* tubular; corolla 5-lobed, yellow or sometimes purplish; style branches truncate and with short sweeping hairs, ? without a distinct stylophore and with a basal annulus; stamens 5; anthers caudate and with a sterile apical appendage; endothelial tissue polarized; filament collar straight in outline and composed of uniform cells and basally not thicker than the filament. *Cypselas* homomorphic, obovoid, mainly brownish-purple and covered with minute myxogenic cells but with a longitudinal, yellow-brown portion devoid of myogenic cells developed on one surface; carpodium absent. *Pappus* absent.

DISTRIBUTION (Fig. 4):

This monotypic genus occurs in central and central-western Australia between c. 25° S and 29° S and c. 120° E and 131° E but excluding the sand-dune regions of the Gibson and Great Victoria Deserts.

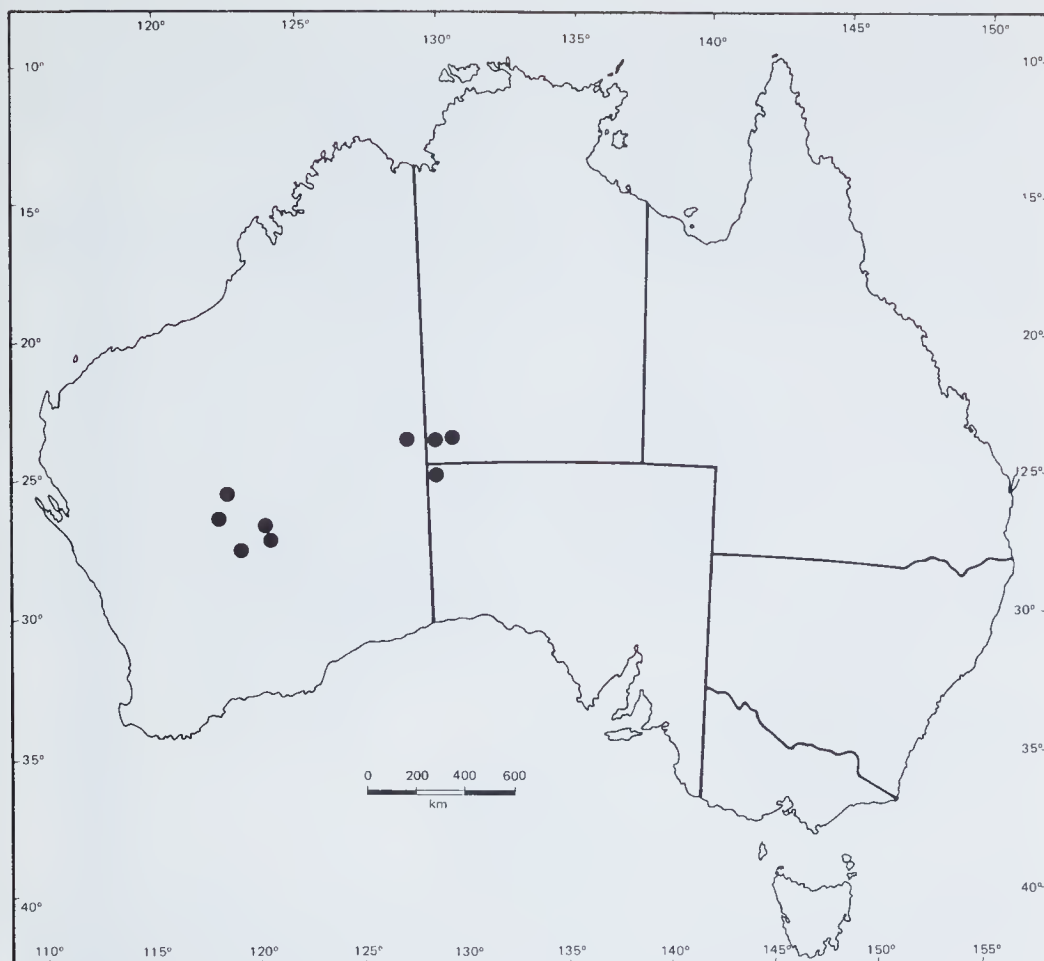


Fig. 4. Distribution of *Tietkensia corrickiae*.

NOTES:

1. The name *Tietkensia* commemorates the central Australian explorer William Henry Tietkens (1844–1933). He accompanied Giles on two expeditions and was leader of the 1889 Central Australian Exploring and Prospecting Association's Expedition. The latter expedition added much geographical detail to the maps of the day (Feeken, Feeken & Spate 1970). Tietkens collected plant specimens for Mueller in Melbourne and Ralph Tate in Adelaide. Their comments (Mueller & Tate 1890) on the collection of 250 species gathered in 1889 were not particularly favourable but none the less they described eight new species from material obtained during this expedition and managed to record an additional 18 species for the Flora of Extra-tropical South Australia.

2. The habit of *T. corrickiae* and the presence of receptacular bracts suggests that this genus has affinities with *Chthonocephalus* Steetz and, as an unnamed species, I have previously referred it to this genus (Short 1981). It is readily differentiated from *Chthonocephalus* by the presence of female florets, not just bisexual disc florets, the paleae which are morphologically similar, not dissimilar, to the capitular bracts, the much branched general receptacle, and the fruit morphology.

Tietkensia corrickiae* P. S. Short, *sp. nov.

Herba annua; plerumque quaeque planta glomerulus unus rosula c. 10–30 foliorum erectorum, raro ramo laterali c. 1 cm longo. *Folia* spatulata, c. 1.5–6 cm longa, 0.2–0.7 cm lata, tomentosa.

Glomeruli transverse ellipsoidei usque lenticulares, c. 0.5 cm longa, 1–4.5 cm diametro. *Capitula* c. 5–50. *Bracteae intra capitula* c. 6–8, ellipticae vel ovatae, c. 3.2–3.8 mm longae, c. 1.4–1.8 mm latae. *Flosculi* c. 30–100 *Flosculi feminei* filiformes; corolla flava, 3 vel 4-lobata, tubo c. 1.9–2.1 mm longo. *Pappus* carens. *Flosculi hermaphroditi* tubulares; corolla 5-lobata, flava vel interdum purpurascens, tubo 1.8–2.2 mm longo. *Stamina* 5; antherae c. 0.75–0.85 mm longae, sporangiis c. 0.6–0.7 mm longis, appendicibus terminalibus triangularibus, c. 0.15 mm longi. *Cypselae* obovoideae, 0.7–0.8 mm longae, 0.4–0.5 mm diametro. *Pappus* absens.

HOLOTYPE: Northern Territory, Ayers Rock to Docker River road at Irvine River crossing. 25° 04'S, 129° 59'E. Gravelly clay flats with scattered *Acacia aneura*, chenopods and grasses and various other Asteraceae. 25.vii.1988, M. G. Corrick 10415 (MEL 693794). **ISOTYPE:** K, PERTH.

Annual herb usually consisting of a compound head (rarely a single capitulum) surrounded by a basal rosette of c. 10–30 erect leaves, rarely with a lateral, c. 1 cm long branch. *Leaves* spatulate, c. 1.5–6 cm long, 0.2–0.7 cm wide, tomentose. *Compound heads* transversely elliptic to lenticular, c. 0.5 cm long, 1–4.5 cm diam. *Capitula* c. 5–50. *Capitular bracts* c. 6–8, elliptic or ovate, c. 3.2–3.8 mm long, c. 1.4–1.8 mm wide. *Florets* c. 30–100. *Female florets* filiform; corolla yellow, 3 or 4-lobed, tube c. 1.9–2.1 mm long. *Bisexual florets* tubular; corolla 5-lobed, yellow or sometimes purplish, tube 1.8–2.2 mm long. *Stamens* 5; anthers 0.75–0.85 mm long; microsporangia 0.6–0.7 mm long; apical appendages triangular, c. 0.15 mm long. *Cypselae* obovoid, 0.7–0.8 mm long, 0.4–0.5 mm diam.; pappus absent. (Fig. 5)

DISTRIBUTION (Fig. 4):

See generic treatment.

ECOLOGY & REPRODUCTIVE BIOLOGY:

Collectors' notes about the habitat include: 'in red clayey loam, mulga scrub', 'in slightly silty sand, creek flood out. Ironwood, annual grassland', '*Acacia aneura*-*Danthonia* community' and 'flats beside rocky outcrop, sandstone sandy soil'.

The species is gynomonoecious. The percentage of female florets in a capitulum is quite variable, even within a single plant, e.g. in Whibley 6785, within which five capitula were examined, the number of female florets ranged from two to five per capitulum but this represented a range of 2.1–13% of the total number of florets. Pollen-ovule ratios have not been accurately determined but a single bisexual floret from Chinnock 502 was found to contain 2,204 pollen grains, suggesting an average P/O of c. 2,000 for the species, a figure suggesting that the species commonly cross-pollinates.

NOTES:

1. The specific epithet honours Mrs Margaret Corrick, now retired but formerly employed as a technical officer at MEL (Coles 1989). Margaret has collected a number of composites for me during the last few years, often when she has been on holiday, and the holotype collection was gathered after her retirement. Her efforts are greatly appreciated.

SELECTED SPECIMENS EXAMINED (Total 16):

Western Australia—60 miles S of Wiluna, 1931, Blackall 316 (PERTH); Giles, Rawlinson Range, 8.vii.1958, Hill & Lothian 906 (AD).

Northern Territory—2.6 km W Irvine Creek, 25.viii.1973, Chinnock 502 (AD, DNA); Armstrong Creek, 25.viii.1973, Latz 4143 (DNA).

South Australia—Plain between Tomkinson and Mann Ranges, 5.ix.1978, Stove 457 (AD); Tomkinson Ranges, 5.ix.1978, Whibley 6785 (AD).



Fig. 5. Holotype sheet of *Tietkensia corrickiae* (Corrick 10415).

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